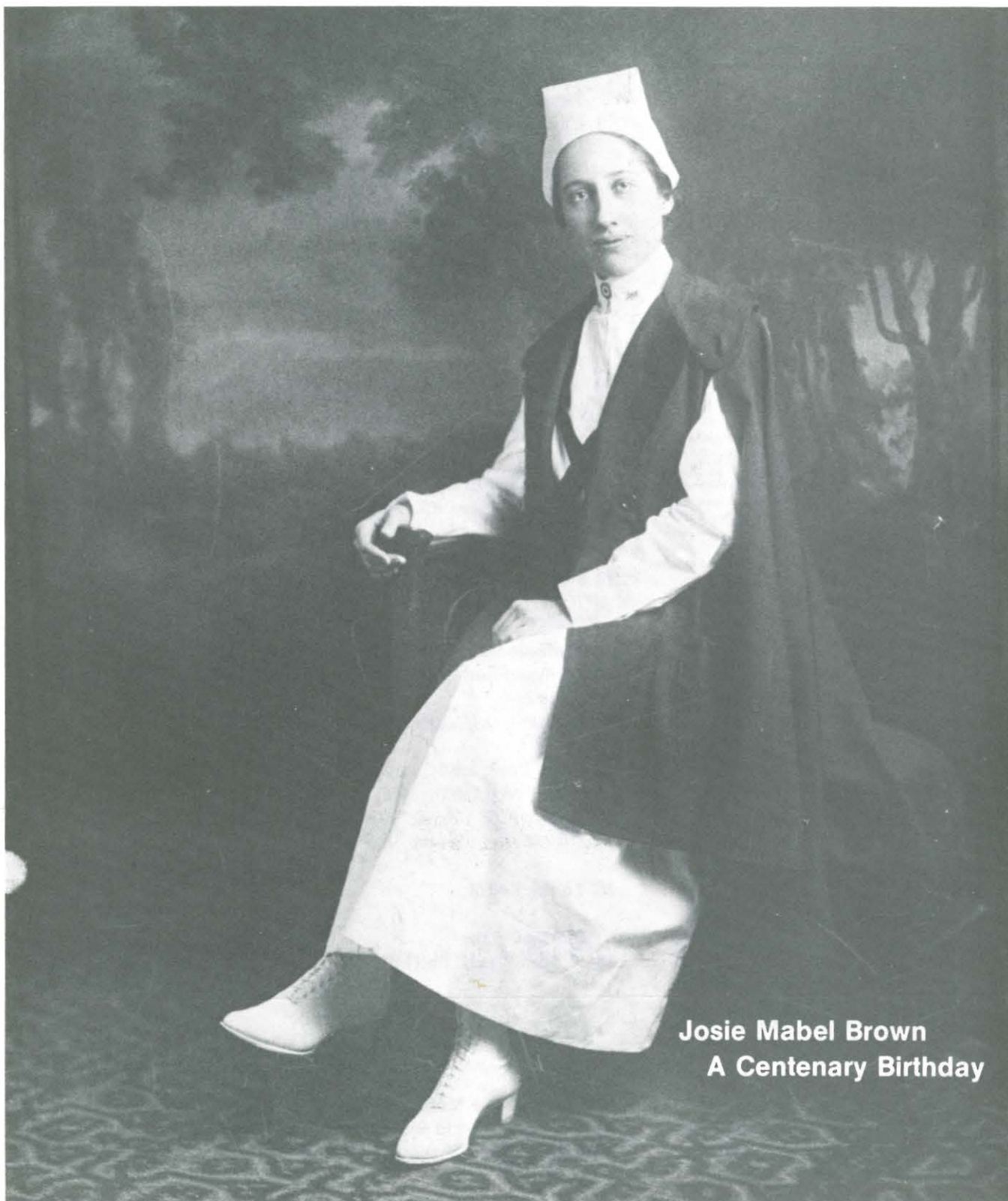


U.S. NAVY MEDICINE

May-June 1986



Josie Mabel Brown
A Centenary Birthday

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To the Editor

In Memoriam

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COVER: As the Navy Nurse Corps marks its 78th anniversary, Josie Mabel Brown, World War I Navy nurse, celebrates her centennial year. Story on page 18. Photo courtesy of Carla R. Morrisey.

Cancer Research in Progress at Naval Academy

Approximately 71 million Americans will eventually develop cancer, according to the American Cancer Society. This encompasses three out of four families. Everyone is pitching in to help find a treatment and cure. Some are contributing money toward the research effort while others, like Midshipman Scott Helmers of the U.S. Naval Academy, are donating their time and talent.

Helmert is one of seven Academy seniors selected to do independent research on the basis of their overall record and the potential of their proposed projects. He began his research with visits to the National Library of Medicine, Bethesda, MD, to study the cancer experiments recorded in technical journals.

Using guesswork, imagination, cre-

ativity, and logic, Helmers hopes to derive new meanings from the facts and figures, and to find relationships that may have eluded other researchers.

"Each experiment is a piece of the puzzle, and I'm trying to fit the pieces together to see the big picture," Helmers said. "I'm looking for general concepts and basic relationships."

Helmert has already identified some of the body's immune responses to cancer cells. In one scenario, cancer cells are gobbled up and the body remains healthy. In another, the cancer cells play a "changing game," mutating at such a speed that the body cannot get rid of them. This happens in diseases like leukemia, measles, and herpes simplex. In a third scenario, the cancer cells deaden the immune system

in much the same way as the dentist uses an anesthetic to deaden the nerves before filling a tooth.

During the course of his project, Helmers will examine these and other responses even more closely and will eventually develop mathematical models to depict the causal relationships between the cancer cells and the body's immune responses.

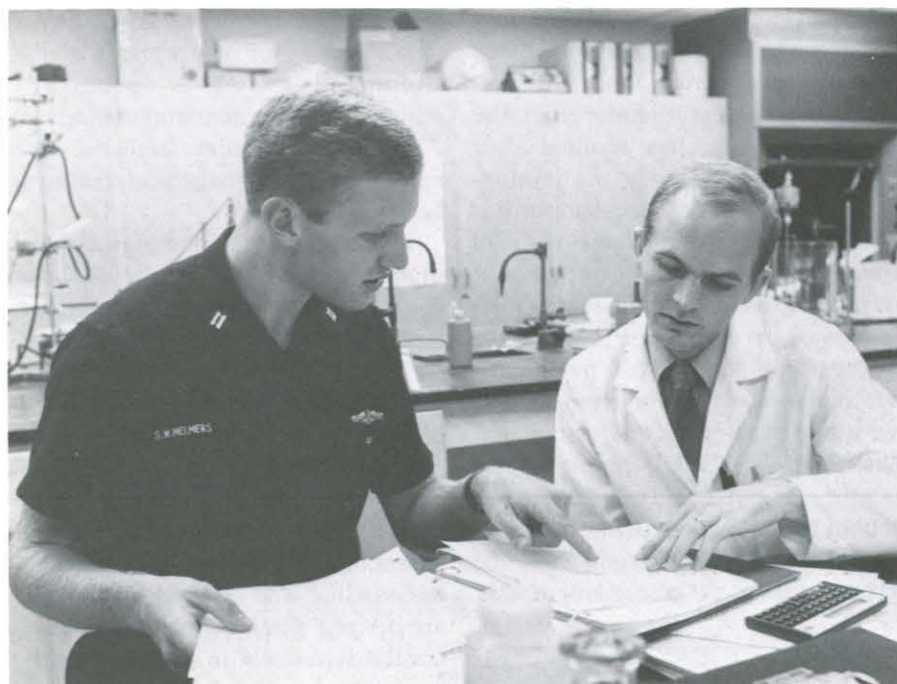
"I'm going to study as many experiments as I can—whatever it takes to derive the models," Helmers said.

A chemistry major, Helmers is using an interdisciplinary approach involving chemistry, biology, mathematics, and computer applications. "This research has used what I've already learned at the Academy," he said, "and has forced me to learn more. I've supplemented my two semesters of biology with additional reading about immunology, and I've pulled out my old mathematics books to see how they developed some models."

"It's a novel approach," says Assistant Professor Boyd A. Waite, Helmers' academic adviser. "He's using mathematical modeling, a new field of study which has just taken off within the last 5 years. He's also crossing scientific boundaries to use chemistry ideas to model a biological type problem."

Helmert will test the accuracy of his theories and assumptions on his personal computer and the Naval Academy Time Sharing System. He expects his research to be applied to forms of cancer such as leukemia and Hodgkin's disease.

When Helmers graduates from the Academy, he hopes to attend medical school and has applied to the Uniformed Services University of the Health Sciences, Bethesda; the Uni-



Helmert (left) discusses his cancer research with Assistant Professor Waite of the Academy's chemistry department.

versity of California, San Francisco Campus; and the University of Southern California.

He has had no problems finding references. A high school honor student in 1982, Helmers is now an honor student at the Academy. "He is a dedicated student who has devoted his weekends to working on the cancer project," Professor Waite said.

For the past 15 years, John F. Kelley, Jr., assistant academic dean, has helped midshipmen prepare for medical school. "During this time, I can't recall seeing a higher set of scores on the Medical College Admissions Test," Kelley said of Helmers' test results. The test is divided into six parts, and he had an excellent score on each part of the test."

Helmers received a taste of what it's like to be a doctor during several visits to the Bethesda Naval Hospital. Midshipmen interested in the medical program visit the hospital and are assigned to a doctor who shows them around and sometimes lets them help with the daily routine of taking patients' pulses, temperatures, and blood pressures.

In addition, while on a professional training cruise aboard an aircraft carrier last summer, Helmers was assigned to the medical department for 2 of his 4 weeks. "The facilities are not quite the same," he said. "Aboard ship, you don't say, 'I'll send out for an X-ray.' You do it yourself."

Helmers didn't always want to be a doctor. When he first entered the Academy, he wanted to fly. "But," he said, "my eyes went the first year," referring to the visual acuity tests pilots must pass.

Thus, when Helmers was asked if he would be interested in the premedical program, he said yes.

"The more I looked into it, the more I liked it," he said. "Bethesda, my shipboard experience, and my project have all been fun, and now I'm looking forward to making medicine and the Navy a career." □

—U.S. Naval Academy Public Affairs, Annapolis, MD 21402.

Career Development and Leadership

CDR James M. LaRocco, MSC, USN

Approximately 3 years ago steps were taken to improve the level of leadership and management ability of all Medical Department personnel. That special project, personally directed by the Surgeon General, is now fully operational. As such, it is and will continue to evolve and be refined to help meet the mission of the Medical Department. The thrust of that program has been two-fold. First, a series of leadership and management education and training (LMET) courses, designed to develop leadership and management skills at critical career points, was proposed. Second, an effort was made to integrate management development and training into career progression and planning in the Medical Department. This latter effort, though less visible than the LMET program, has resulted in a career progression guide, the development of criteria for command screening, a review and revision of AQD's and NOBC's (currently underway), and other policies and guidelines relevant to career development.

Regarding the LMET portion of our management development system, we now have four levels of courses. **Basic LMET** is CNET-sponsored and taught at Officer Indoctrination School (OIS), which all staff officers attend. Students are introduced to the basic theories of management and

begin learning the *competency acquisition process*, which is the basis of all LMET courses. They review the competencies (skills and behaviors that distinguish outstanding from average performers) that are important for junior officers in general.

The remaining three courses have been developed by, and are the responsibility of, the Medical Department. **Intermediate Level LMET** is aimed at the lieutenants and lieutenant commanders who are division officers, department heads, charge nurses, or in other supervisory positions. **Senior Level LMET** is designed for department heads, directors of services, OIC's, and other supervisors who are commanders or captains. Finally, **Command LMET** is specifically designed for commanding officers of Medical Department facilities, with special emphasis on medical treatment facilities.

The details of the development and unique characteristics of these courses has been presented in previous articles. (1,2) Briefly, the content of LMET courses is derived from research findings based on surveys and individual interviews. From these data two key pieces of information are obtained. First, through structured interviews, a set of skills and behaviors (called competencies) that distinguish between outstanding and average performers are derived. Each organization level is treated separately in determining the competencies. This approach is unique because it does not assume that one set of management behaviors can be ap-

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plied to all levels in the organization. In fact, there are different competency models for different Navy communities (e.g., the line, supply corps). Unlike most management courses, which teach general management theory and practices, LMET teaches behaviors determined by research to result in excellence in medical facilities management.

Second, the key tasks performed by incumbents at the level in the organization for which the course is being designed are determined. Using the research findings on key tasks, the LMET courses are then carefully constructed to present and teach the competencies in the context of real job concerns. The courses are constructed on current principles of adult learning. One cannot overemphasize the amount of time and effort that has gone into designing these courses. Each and every aspect was reviewed in detail using content experts, education experts, and Medical Department personnel. The first iteration of each LMET course was considered only a prototype. Course designers sat in on the pilot course noting what worked and what didn't. At the end of each day extensive debriefing with the instructors occurred in order to further refine and develop the course. Only after these revisions were incorporated into a "final" version were the courses considered operational. In short, our LMET courses represent state-of-the-art technology that equals or surpasses any management development course available to either the public or private sector.

What makes these courses special is the focus on teaching practical skills rather than general theory. This process is aided by the method of instruction which limits lectures and emphasizes role plays, simulations, and other exercises in which participants practice the competencies on tasks they actually engage in on the job. For example, the commanding officers' course includes exercises in holding a captain's mast, writing a command policy speech, and JCAH preparation. Similarly, the senior level

course deals with conflict management, preparing budgets, and counseling subordinates. It is important to note that the courses capitalize on the wide range of knowledge and experience the participants bring to the class. There is a great deal of sharing of this information; in no way are students passive recipients of classroom material.

As one might expect, the three courses overlap in many of the competencies and exercises. All leaders and managers in the Medical Department must be concerned with quality of care (standards), resource management, and influencing the system. Those same categories can be found in competency studies in most industries.⁽³⁾ At each level, however, behaviors required to express a competency may differ. Commanding officers, for instance, must deal with and influence the local community and other constituents outside their command; at the senior and intermediate level, influence strategies focus more on subordinates and peers. In a similar vein, all three courses have a session on fitness report writing, cost benefit analysis, and problem solving. However, as with the competencies, the focus and types of behaviors required differ somewhat from level to level. In short, leadership principles and concerns are universal but the action steps vary.

Of course, in our health care system, with different corps, career tracks, facility sizes and so on, the distinction between what lieutenants and lieutenant commanders do versus what commanders and captains do is often less clear than the distinction between commanding officers and everyone else. Not surprisingly, the research conducted when developing the senior and intermediate courses resulted in the same general competency model for both levels (Table 1). Differences did show up, however, in the specific behaviors performed at those levels.

The primary difference between the senior and intermediate level officers is that the intermediate level officers are more often in the transition phase from individual contributor to team

player and manager. At the senior level the primary adjustment revolves around larger system issues, including adjusting to and representing the concerns of those outside their subspecialty and even their corps. Adjusting to the larger system perspective and dealing with system issues in a fair and ethical manner is a major step toward assuming the role of commanding officer.

Indeed, the Medical Department LMET courses are designed as an integrated series of courses, each preparing one for a higher level of responsibility. However, no 2-week course, or series of courses, no matter how well designed can make an individual a better leader. We *can* make individuals aware of what outstanding officers do on their jobs. Those indi-

TABLE 1
Senior and Intermediate
Level Competency Model

<i>Quality of Care</i>
Concern for High Standards
<i>Resource Management</i>
Planning and Goal Setting
Initiative
Persistence
Concern for Efficiency
<i>Leadership and Management</i>
Concern for Subordinates
Developing Others
Team Building
Conflict Resolution
Clear Communication
<i>Diagnostic Capabilities</i>
Information Gathering
Interpersonal Assessment
Analytical and Conceptual Thinking
<i>Influence</i>
Use of Influence Strategies
Political Sensitivity
Concern for Image

Career Progression and Competency Development

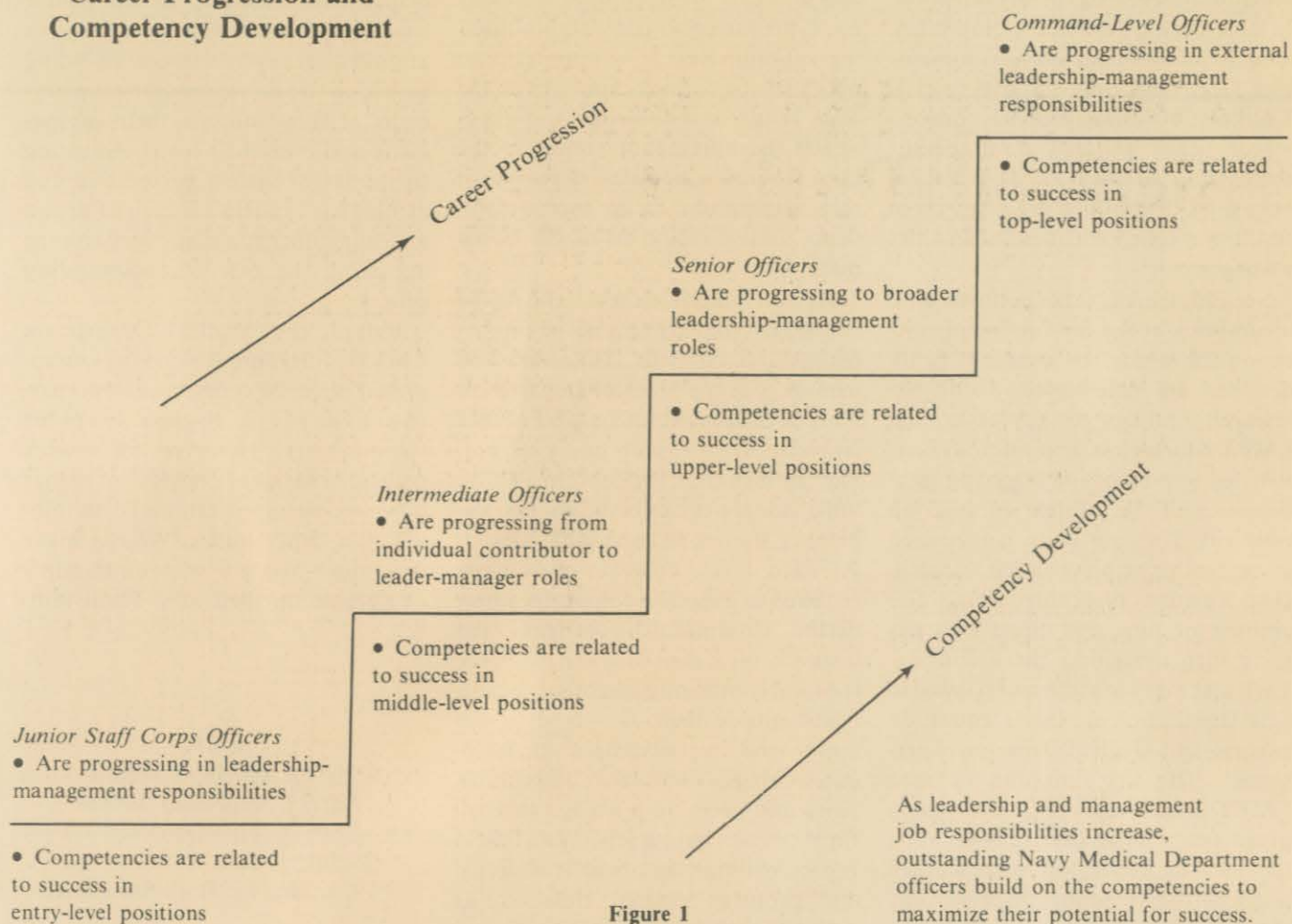


Figure 1

viduals must then have the desire, opportunity, and ability to apply competencies on their jobs. This leads to an important point about the LMET program which was alluded to earlier. LMET is only one part of a two-part program to enhance the level of leadership and management ability in the Medical Department. Equally as important as LMET, has been the effort to improve our personnel system, and to create an integrated leadership and management program that links training and experience with career development opportunities. This system, diagrammed in Figure 1, has been developed over the last 3 years and is one for which the Medical Department can be proud.

Finally, it is necessary to reiterate a point made over 2 years ago, when the

initial article describing the thrust of the LMET program was written. The Medical Department's efforts have been in concert with the VCNO's directive to "establish a requirement for LMET at appropriate points in the career of all Medical Department officers."⁽⁴⁾ Perhaps because of the publicity surrounding management issues in the Medical Department, some have assumed that clinical or scientist professionals had to enter a management track for career progression in our health care system. This has never been the intention of our efforts. A special task force is currently working on developing a clearer articulation of both clinical and administrative career tracks; however, as noted in the original description of our leadership training program:

The effect of this competency-based system will be that those individuals who are most suited to remain in clinical or technical specialties will be identified as such and will do so, while those clinicians and other professionals who are well suited for management positions will be identified and groomed for roles as health care executives. Ideally, each individual will hold a job that best uses his or her talents. The beneficiary will be the Medical Department, whose management will be strengthened by capable, trained leaders.⁽⁵⁾

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General Approach to the Poisoned Patient

LCDR Glenn C. Freas, MC, USNR

Chemicals are ubiquitous in our society. Some are benign, but the majority can have a negative impact if improperly ingested or abused. The following statistics have been extracted from various sources and serve to illustrate the magnitude of the problem:

- 150 million persons drink alcohol
- 20 million persons are alcoholics
- 3-4 million persons are polysubstance abusers
- 90 percent of all poisoning victims are children
- 80-90 percent of childhood poisonings occur before the age of 5
- 90 percent of all narcotic overdoses are mixed
- 2-5 percent of all physicians are drug-dependent
- 10-20 percent of all admissions to adult medical services are for toxic ingestions

More than 3 billion drug orders and prescriptions are written annually!

Most physicians deal with poisoned patients regardless of specialty or subspecialty. To keep pace with, and to prescribe the ever-expanding variety of available medications properly, is an imposing challenge for even the most diligent and conscientious physician. To add to that, the myriad of environmental poisons and commercial products that can injure or kill only begins to put the magnitude of the problem in perspective.

Emergency management of the poisoned patient must be methodical and thorough, yet the constraints of time

dictate a certain urgency to that management. Meticulous attention to the "ABC's" and initial stabilization is of paramount importance. A properly administered specific antidote will be of little benefit to the poisoned patient who sustains aspiration pneumonitis because of an inadequately protected airway.

The initial management of the poisoning victim can be subdivided into the following categories:

1. Resuscitation and Stabilization
 - a. Airway
 - b. Breathing
 - c. Circulation
2. History and Physical Examination
 - a. Assessment of associated injuries or medical conditions
 - b. Protection/restraint of the patient
3. Evaluation of Major Toxic Signs
4. Laboratory Evaluation
5. Specific Antidotes
6. Active Drug Removal
7. Prevention of Further Absorption/Catharsis
8. Hemodialysis/Hemoperfusion
9. Observation and Disposition

Resuscitation and Stabilization

Airway. Stabilization and maintenance of an adequate airway is the cornerstone of this phase of therapy. Obtundation, hypoventilation or apnea, a weak or absent gag reflex, signs of airway obstruction (stridor), or associated maxillofacial injuries all warrant immediate management with nasotracheal or orotracheal intubation. Nasotracheal intubation, if possible, is performed because it is better tolerated by the semiconscious patient

and it affords easier access for passage of large bore orogastric tubes.

Breathing. All poisoned patients, no matter how seemingly trivial the ingestion, should receive supplemental oxygen. Oxygen is required to meet metabolic needs and is specifically therapeutic in the treatment of toxins, such as carbon monoxide, which interfere with the transport of oxygen. Supplementing a hypoventilating patient's breathing with a bag-valve mask for prolonged periods is to be discouraged because it may cause overdistention of the stomach, vomiting, and possible aspiration. If arterial blood gas determinations show hypoventilation or hypoxemia the patient should be endotracheally intubated and mechanically ventilated. Respiratory rate, effort, and breath sounds must be constantly reassessed. Noncardiogenic pulmonary edema or direct gaseous toxins may complicate pulmonary function.

Circulation. Maintenance of adequate end organ perfusion requires that intravascular volume, cardiac function, and systemic vascular resistance be controlled. The placement of a large bore intravenous catheter for crystalloid solution and the application of a cardiac monitor are required for all poisoning victims. Serial CVP readings (or other methods of assessing vascular filling pressures), measurement of urine output, observation of neck veins, and frequent auscultation of the lungs can aid in judging the response to fluid resuscitation in the emergency room setting. Direct arterial monitoring and measurement of pulmonary capillary wedge pressures are usually initiated in the intensive care unit. Use of pressor agents should

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be reserved until failure of fluid resuscitation is demonstrated; toxins that cause hypotension by venous pooling far outnumber the agents, such as propranolol, that might cause primary myocardial depression.(1)

History and Physical

History. Once the patient is stabilized, efforts must be made to determine the relevant details of the poisoning. Sir William Osler's aphorism that the history is 90 percent of diagnosis does not pertain to the poisoned patient. At least 50 percent of histories are in error for reasons that include drug-induced confusion, amnesia, misinformation (particularly important in recreational drug overdose), and deliberate attempts at deception. Despite these limitations, the physician must attempt to ascertain the type and mode of poisoning, the quantity of toxin involved, the time since initial exposure, and the circumstances precipitating the ingestion.

Physical. The physical examination can reveal the presence of a toxic syndrome and detect complications of the poisoning and underlying disease. According to Done the important toxic syndromes are anticholinergic, anticholinesterase, cholinergic, extrapyramidal, hemoglobinopathic, narcotic, sympathomimetic, and withdrawal syndromes.(2) Particular attention to vital signs, neurologic function, cardiopulmonary status, and secretory products yield sufficient information to identify a particular syndrome.

Other Conditions. All poisoning victims can have their clinical course complicated by associated injuries or medical conditions. External or historical evidence of trauma must be thoroughly evaluated. Urgent associated medical conditions, such as hypoglycemia, renal failure, or cardiac events, must be addressed promptly.

Protection/Restraint. The patient must be protected from himself when necessary. Premature removal of CVP lines, endotracheal tubes, and orogastric tubes can be prevented by applica-

tion of restraints. Appropriate use of therapeutic restraint is medicolegally sound and good medicine.(3) Allowing an intoxicated, combative patient to leave the treatment area leaves the physician open to indefensible liability should the patient subsequently decompensate or hurt others.

Evaluation of Major Signs

The initial physical manifestations of poisoning and overdose are protean. One approach is to deal with five major toxic signs:

Cardiac Arrhythmias. All patients with poisoning must have an EKG performed. Important clues can be gained from the QT interval, QRS duration, or specific arrhythmias. The patient with a life-threatening arrhythmia is managed according to ACLS type protocols. If tricyclic antidepressant overdose is suspected, sodium bicarbonate is indicated for ventricular arrhythmias or conduction disturbances.

Metabolic Acidosis. Many agents can cause metabolic acidosis including methanol, ethylene glycol, salicylates, iron, cyanide, phenol, and carbon tetrachloride. Assessment of metabolic acidosis should involve examination of electrolytes, renal function, anion gap, serum acetone, arterial blood gas, and serum osmolality.

Coma. Coma is a common presenting manifestation of the poisoned patient. As always, other causes of coma must be excluded. Treatment

involves the administration of glucose and naloxone as discussed below.

Gastrointestinal Disturbances. Iron, lithium, phosphorus, arsenic, mushrooms, colchicine, and fluorides are some common toxins which cause severe vomiting, diarrhea, or both. The management of GI disturbances is specific to each agent.

Seizures. Many agents can cause seizures, as can drug withdrawal. Seizures should be managed by controlling the airway and administering oxygen. Single isolated seizures require observation and supportive care. Repetitive seizures or status epilepticus can be initially treated with intravenous diazepam.

Laboratory Evaluation

Many diagnostic aids are available. Careful selective use of laboratory tests can be extremely valuable. An indiscriminate "shotgun" approach, and delaying therapy while awaiting results, can be disastrous. In general, any significant poisoning victim should have blood collected for measurement of a CBC, serum electrolytes, blood urea nitrogen, creatinine, glucose, arterial blood gases, and prothrombin time. Serum acetone and osmolality determinations can be helpful to evaluate the metabolic acidosis. Selective use of toxicology screens (using blood, urine, and gastric aspirate) can be a useful diagnostic adjunct but should never delay therapy. If carbon monoxide is suspected,

<i>Agent/Syndrome</i>	<i>Antidote</i>
Acetaminophen	Acetylcysteine, methionine
Cholinergic crisis (organophosphate)	Atropine, pralidoxime
Extrapyramidal syndrome	Diphenhydramine, cogentin
Oxalosis, fluorinosis	Calcium
Heavy metals	Chelating agents
Ethylene glycol, methanol	Ethanol
Methemoglobinemia	Methylene blue
Opiates	Naloxone
Carbon monoxide	Oxygen
Anticholinergics	Physostigmine
Cyanide	Sodium nitrite, sodium thiosulfate

carboxyhemoglobin levels are mandatory.

Specific Antidotes

All obtunded or undifferentiated patients with a change in mental status should receive 50 g of concentrated dextrose (if blood glucose chemistrip is <100 mg/dl and after serum for glucose has been drawn) and 0.8 to 2.0 mg of naloxone hydrochloride intravenously. These measures will dramatically reverse hypoglycemia and narcotic overdose respectively. The only contraindication to naloxone administration is previous sensitivity. Some authors advocate administration of 100 mg of thiamine in suspected alcoholics either before or concurrent with dextrose administration in order to prevent the acute onset of Wernicke-Korsakoff syndrome.

Other specific antidotes and their doses are available from a variety of readily available texts.^(1,2) See examples in chart.

Active Drug Removal

Active drug removal applies to substances inhaled, absorbed through the skin or eyes, as well as by GI ingestion. Washing the skin, irrigating the eyes, or provision of an oxygen-enriched environment may be applicable.

There are two nonsurgical ways to expediently empty the stomach: induced emesis and gastric lavage. When awake, cooperative patients with an intact gag reflex may be given syrup of ipecac. In adults the dose is 30 ml followed by approximately 32 oz of water. Children should be given 10-15 ml followed by a proportionate amount of water. If emesis has not occurred in 20 minutes, the initial dose may be repeated. This approach is successful in 95-98 percent of cases within 45 minutes. Apomorphine is not used extensively because of the intensity of the emesis it produces.

Gastric lavage is indicated if the patient does not meet the criteria for induced emesis. The airway must be protected by intubation if there is obtundation or loss of the gag reflex. A 34 French or larger orogastric tube

should be passed to effect proper removal of pill fragments. The initial aspirate should be saved for possible toxicological analysis. Lavage aliquots should be 15 ml/kg not to exceed 200 ml per aliquot. In general, isotonic saline solution can be used but tap water can suffice in adults. Certain toxins such as iron or glutethamide warrant unique lavage fluids, bicarbonate and castor oil respectively.

Prevention of Further Absorption/Catharsis

Prevention of further absorption can be accomplished with activated charcoal. Activated charcoal is an extremely efficacious adsorbent material for most chemical ingestants. The activated charcoal-toxin complex remains stable throughout the GI tract. The recommended dose is 1 g of activated charcoal per kilogram of body weight. The most successful approach is to put 50 g in water (1:4 ratio of charcoal to water) to create a slurry. While some either very cooperative or very passive-aggressive patients will be able to drink this, a more successful approach is to administer this slurry via a regular nasogastric tube. If subsequent administration of acetylcysteine is contemplated, do not give charcoal as the charcoal will adsorb the antidote. Charcoal will not adsorb ferrous sulfate, acids, cyanide, and certain other toxins. It adsorbs alcohol incompletely.

Most toxicologists still recommend a cathartic agent to enhance GI transit of adsorbed and nonadsorbed materials. The recommended dose of magnesium citrate is 100-200 cc in adults, 50-100 cc in children aged 6-12 years, and 4-12 cc in children aged 2-5 years. The doses should be repeated at 4-hour intervals until charcoal-stained stool appears. Cathartics should be avoided in patients with absent bowel sounds, in the very young and very debilitated, and in patients with underlying bowel disease or recent surgery.

Hemodialysis/Hemoperfusion

Briefly stated these measures should be considered with:

- Progressive deterioration despite intensive supportive therapy.
- Severe intoxication with depression of midbrain functions leading to hypothermia, hypoventilation, or hypotension.
- Impairment of normal excretory function because of the presence of hepatic, cardiac, or renal insufficiency. (4)

Observation and Disposition

Liberal use of admission for continued observation is generally encouraged because of the delayed effects of many toxins. Iron, acetaminophen, carbon tetrachloride, mercury, tricyclic antidepressants, and phencyclidine are among such toxins.

The disposition of the poisoned patient may involve medical and psychiatric as well as social work follow-up. Overt or subtle suicide attempts or gestures indicate the need for psychiatric consultation. In addition, the question of child abuse should always be raised in the physician's mind when treating a pediatric poisoning or overdose.

In summary, prompt and systematic assessment and treatment of the poisoned patient can have a favorable impact on the eventual outcome. Stabilization and constant reassessment of the patient, supplemented by carefully selected specific diagnostic and therapeutic measures will decrease patient morbidity and mortality. All physicians must have a working knowledge of the above management principles to manage successfully this widespread problem.

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Awareness of the Navy Tissue Bank and the Organ Donor Program

HMI Joel R. Schwarz, USN

CDR Michael A. Clark, MC, USN

The media almost daily mentions some occurrence involving organ transplantation as well as the public's perceived shortage of organs and tissues available for transplantation. The existence of this shortage may be due to an assumption, by both medical professionals and lay people, that The Uniform Anatomical Gift Act of 1964 has solved the problem of procurement of organs and tissues for transplantation. Navy has been recognized as a pioneer in procurement, processing, and long-term storage of freeze-dried human tissue for transplantation since 1949, with the establishment of the world's first tissue bank facility at Bethesda, MD.* Subsequently, a second facility was opened in 1969 at the Naval Hospital, San Diego, CA.

Both institutions in recent years have experienced a decline in tissue donations, even in light of continued media coverage of transplantation and organ donor programs. It was felt that this decline in the number of donors could, in part, be the result of lack of awareness of the Navy Tissue Bank Program by the Medical Department

staff. The present study was undertaken to test this hypothesis.

Materials and Methods

The Tissue Bank staff in San Diego held a widely publicized 1-day seminar on organ and tissue donation and on transplantation techniques in January 1985. The seminar was open to members of the medical, dental, and nursing services and Hospital Corps personnel; civilian health care professionals were admitted on a space available basis. Presentations covered the Navy Tissue Bank Program, the medicolegal considerations of tissue and organs procurement, family counseling in time of crisis, and surgical procedures of tissue and organ transplantation.

As part of the registration packet, everyone was given a 17-item questionnaire, which was to be filled out at the end of the program. Besides the 7 demographic discriminators, 10 questions were asked concerning personal and professional feelings about tissue donation and preseminar awareness of the Navy Tissue Bank Program (Tables 1 and 2). The questions were compiled by Tissue Bank staff members, and they were based upon questions most frequently asked by attendees at donor awareness seminars given to local commands.

The results of the survey and the questionnaire are tabulated in Tables 1

and 2. It is significant that only 80 percent, many of whom submitted documentation for continuing education credit, returned the questionnaire. It is also interesting, that aside from the two Medical Corps officers who presented lectures, no Medical or Dental Corps officers attended the seminar.

At the conclusion of the course, the number of people wishing to carry a donor card had doubled. It was also discovered that approximately 60 percent of the participants previously discussed tissue donations with their families. Fifty-four percent knew about the Navy Tissue Bank Program prior to the seminar; we assumed all attendees now knew of the Tissue Bank program. Fifty percent, who did not wish to be donors, gave no reason and, interestingly, none of them cited "religious objections."

Discussion

Preregistration indicated that the auditorium would be 78 percent filled, but, in fact, only 57 percent of those preregistered attended. Participation of this kind (or lack of) seems not unique to the Navy or the medical field. Past studies have suggested that committing oneself to tissue donation is either too complex, too final, or positive attitudes are superficial.^(1,6,7) Only 80 percent of the attendees returned a completed questionnaire.

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*See "The Navy Tissue Bank," *U.S. Navy Medicine*, May 1980.

The program did accomplish several goals. First of all, at the beginning of the seminar a mere 35 percent of the health care professionals carried donor cards, but at the end of the day 65 percent carried a valid donor card. Of those people not wishing to carry cards, 9 percent cited moral/ethical reasons, 6 percent stated no reason, and the remainder failed to respond. Of those who did not carry cards at the beginning of the seminar, 34 percent cited lack of knowledge as a reason. This seems to be an incredible observation of health care professionals, when one considers the almost daily mention of organ and tissue transplantation in the media, and the publication of organ and tissue transplantation topics in nearly all medical and nursing journals.(2,3) Forty-five percent of the attendees were unaware of the Navy Tissue Bank Program even though at least 55 percent were active duty Navy personnel. This general lack of knowledge concerning organ and tissue transplantation is also reflected in the fact that 60 percent of the respondents were unaware of the homogeneity of The Uniform Anatomical Gift Act, i.e., that a donor card issued in one state is valid in any other state.

A large minority (43 percent) voiced concern over the condition of the remains following postmortem organ and tissue procurement procedures and, in the experience of the authors, this is a concern very commonly discussed at transplantation awareness seminars given to largely nonmedical groups. This again stresses the relative ignorance of medical personnel concerning organ and tissue transplantation.

The fact that a decedent, (for example the victim of a motor vehicle accident) has a donor card on his/her person at the time of death does not insure that tissue will be procured via transplantation. The possibility of such an individual becoming an organ donor is less than 1 in 5,000.(4) The problem seems to start with the decedent's previous decision to sign a donor card.(5) In our seminar, 61 per-

TABLE 1
Demographic Discriminators of Attendees

Attendance: 55

Respondents: 44

Medical Experience:

- Combined Years 494.95
- Least Years .25
- Most Years 33
- Average Years 11.24

Age Range: 22 to 59 (Average 44)

Marital Status: Married 22/50% - Single 16/36% - No Response 6/13.6%

Sex: Male 11/25% - Female 27/61.3% - No Response 6/13.6%

<i>Personnel Status:</i>	USN	USNR	Civilian	No Response
	36.3%	29.54%	22.7%	11.36%
	16	13	10	5

<i>Response:</i>	Medical Corps	Nurse Corps	Medical Service Corps	Hospital Corps
(Military)	0	9	16	6
		20.45%	36.3%	13.6%

No Response:
15
34.09%

<i>Response:</i>	Physician	Nurse	Technician	Other*
(Civilian)	0	1	1	2
		2.27%	2.27%	4.5%

*LVN and social worker

cent of attendees had discussed organ donation with their families, and 59 percent perceived that their families were aware of their wishes.

The philosophy of the Tissue Bank staff is that a signed donor card in the possession of a decedent becomes "a foot in the door" to approach the next of kin either in person or via a Casualty Assistance Calls Officer for permission to procure organs and/or tissue. This practice is predicated on the presumption that individuals

carrying donor cards have made their wishes known should death occur. In 3 years we have been denied permission for procurement only once when a decedent was carrying a donor card. In this case, the victim was carrying a donor card and had talked with his parents only hours before committing suicide. For these reasons, we urgently stress the need, to anyone who fills out a donor card, to inform their next of kin of their wishes.

Members of the transplant com-

TABLE 2
Questionnaire With Answers

1. Do you currently carry a donor card?		
Yes	No	No Response
14	29	1
31.8%	65.9%	2.27%
2. Would you like to carry a donor card?		
Yes	No	No Response
28	9	7
63.6%	20.45%	15.9%
3. Did you know a donor card generated in one state is legal in all 49 other states?		
Yes	No	No Response
18	26	0
40.9%	59.09%	
4. Have you and your family ever discussed tissue donation?		
Yes	No	No Response
27	17	0
61.36%	38.6%	
5. Is your family aware of your wishes concerning donations?		
Yes	No	No Response
26	17	1
59%	38.6%	2.27%
6. If, at this time you are not an organ donor, is it because of:		
A. Moral/ethical questions: 4/9.09%		
B. Religious convictions: 0		
C. General lack of knowledge: 15/34.09%		
D. Other:* 3/6.8%		
No Response: 22/50%		
7. Were you aware of the Navy Transplant Program prior to this seminar?		
Yes	No	No Response
24	20	0
54.5%	45.45%	
8. When speaking with lay people, many voice concerns in relation to treatment/condition of the remains. Do you share this concern?		
Yes	No	No Response
19	25	0
43.18%	56.8%	
9. Do you have general knowledge of the medical/legal restrictions involved with donations?		
Yes	No	No Response
35	9	0
79.5%	20.45%	
10. Could you distinguish between an acceptable and an unsuitable donor?		
Yes	No	No Response
30	13	1
68.18%	29.54%	2.27%

*Other: Explained as "undecided" and "no specific reason"

munity need to recognize that though a donor card may remain unsigned it becomes a topic for discussion. This discussion, whether taking place over a long distance phone conversation or across the dinner table, can be the determining factor of acquiring consent for tissue donation. Most, if not all, tissue or organ transplantation programs will not harvest tissue or organs from a donor without permission of the next of kin even if the decedent is carrying a donor card at the time of death.(5)

We conclude that if Navy and civilian tissue banks are to procure tissues and organs from donors, the public must be educated and informed about tissue and organ donation and encouraged to sign and carry donor cards, and the next of kin should be informed of the donor's wishes. Therefore, along with active duty personnel, all dependents, retirees, and civilians should be educated concerning organ and tissue donation, and they should have their donor cards readily available, i.e., attached to a driver's license or a Department of Defense identification card.

One final option is seen—education that is presented directly and specifically within the medical community. Stuart(7) felt there was a resistance within the medical field to participate in the organ retrieval process. Physicians are largely unaware of the comfort of the gift of life that is given to the next of kin following tissue donation. Also, physicians may see a potential donor as a treatment failure and are reluctant to approach the family with a tissue donor request.

Furthermore, nursing staffs require a program of instruction. For those already in the field, this can be done through efforts coordinated between transplant centers and local hospitals. Nursing schools should also become cognizant of the importance of educating students in recognizing potential donors and emotionally coping with the maintenance of a donor. On the other hand, transplant centers must become aware of the benefit of followup with ICU staffs after tissue/organ procurement.

The Influenza Epidemic of 1918

Carla R. Morrisey, RN, BSN

We are currently instituting a mass education program concerning tissue donation for all active duty personnel in the San Diego area. This program includes seminars for individual commands as well as videotapes of those seminars for use by ships at sea and by isolated duty stations. Organ donor information packets and donor cards are being made available at offices issuing military identification cards and at blood donor drives.

Although the response rate of the survey may have initially been poor, a 33 percent increase in postmortem tissue donation was noted in the month following the seminar and a 100 percent increase noted 2 months later. These increases were almost exclusively due to involvement by the Medical Service Corps officers in obtaining permission for tissue donation from the next of kin while doing decedent affairs interviews as an officer of the day. In a verbal pooling of these officers, it seemed apparent that they were largely unaware of the Navy Tissue Bank Program before attending the seminar. The real key to success in donor procurement seems to be the education of potential donors and stimulating an interest in those personnel who will perform the interviews of the next of kin to obtain permission for postmortem tissue donation.

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Although millions of lives were lost worldwide, the "Spanish" Influenza Epidemic of 1918 is hardly more than a footnote in the written accounts of World War I. The technical aspects of the epidemic and its destructiveness can be gleaned from contemporary medical records and journals, yet one must turn to oral accounts and personal diaries to realize the impact this pandemic had on the lives of those who lived through it.

This article is based on an oral history provided by Josie Mabel Brown, a Navy nurse who served at Great Lakes Naval Hospital during the height of the epidemic, and this year celebrates her 100th birthday. (See box)

Though it now seems merely a folk-memory, the Influenza Epidemic of 1918 was the third greatest plague in the history of mankind. The most devastating epidemic since the Middle Ages, it took over 21 million lives and affected over half the world's population.(1) Logically, one would think that an epidemic of this proportion would have left an indelible imprint on the American people, yet it never inspired awe, not in 1918 and not since.

As one searches for explanations as to why Americans took little notice of the epidemic and then quickly forgot what they did notice, a mystery and a paradox emerge. The formal histories,

magazines, newspapers, and military journals notably ignored the epidemic. Little was noticed and recorded for later generations. However, if one turns to personal reminiscences, to collections of old photographs, albums of family letters, and autobiographies of people who were not in authority, it is apparent that the individual was frightened and his life dramatically changed.

What mystery and paradox surrounded the epidemic? The mystery was the complacency the American people displayed as a group toward the epidemic. The paradox was the common individual's clear acknowledgment that the epidemic was the most influential experience of his life.

Why did Americans pay so little attention to this scourge, and why has history been so silent? No infection, no war, no famine has ever killed so many people in so short a time. Its sheer devastation is incomprehensible. The flu killed millions of people in 1 year or less. In the United States alone, 550,000 died within the 16-week period from October 1918 to February 1919.(2)

To understand this lack of attention, one must look at the years preceding the outbreak. Lethal epidemics were not as unexpected and therefore not as impressive as they might be in the more technologically advanced surroundings of today. The terror of typhoid, yellow fever, diphtheria, and cholera were well within living memory. Most Americans had lived through the typhoid and smallpox epidemics of 1876 and 1890.(3)

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Beyond this complacent acceptance of epidemics as a part of life, one must rely almost entirely on speculation in finding further answers.

If the "Spanish Influenza" had settled down as a permanent source of misery in the country, then possibly Americans might have granted this variety of flu the notoriety it deserved. But the devastation came, scooped up its victims, and all but disappeared within a few short months. If the flu had lingered like syphilis and cancer, or left disfigured and crippled reminders for decades to come, notoriety probably would have been forthcoming. If the flu had been a disease that evoked a memory of terror, Americans might have panicked. This complete absence of fear, which until 1918 had inflicted no more than a few uncomfortable days of cold-like symptoms, is reflected in a statement by A.J. McLaughlin, then Assistant General of the U.S. Public Health Service:

An epidemic of yellow fever with the loss of thousands of lives spread over a considerable territory would throw the whole country into a panic. A dozen cases of plague in a seaport town would cause the same kind of excitement: but it is remarkable to see the placidity by which the people have generally taken the almost sudden loss of 500,000 (sic) lives.(4)

The nature of the disease and its contagiousness encouraged forgetfulness as well. The swiftness of its spread and its ability to flourish then disappear before it had any real effect on the economy made it easier for people to accept. Rabies, which struck very few and was fatal to those who contracted it, was much more frightening than influenza which infected the majority of the people but killed only 3 percent of the Nation's population.

World War I perhaps best explained the relative indifference to the pandemic. The 5 Nov 1918 issue of *The New York Times* suggested that "war had taught the people to think in terms other than the individual interest and safety, and death itself had become so



American Red Cross

familiar as to lose its grimness."(5) Such an explanation may seem quite naive, but most of those who died were young adults of the same age as those lost in combat. The obituary columns of influenza victims became one and the same blur with the war casualty list.

Many people looked upon the influenza simply as a subdivision of the war. The flu was bringing death to the people at home, just as the "Huns" brought death to the doughboys in France. The people of 1918 appeared to gain some dignity from their "battle" with flu if they thought of it in terms of war. A disease that certainly had to be met and conquered was described by one author in heroic, war-like terms when he stated, "It is hard to make people actively aware of the fact that every nation under the canopy of heaven is at war with disease and death, and the human toll is vastly greater than that of any conflict of arms."(6)

As Allied troops were engaged in their last great push across France and

Belgium, it was the crumbling European empires and Woodrow Wilson's peace terms that made the headlines. In November 1918, after 2 successive weeks in which the country had lost 9,000 to the flu, *The New York Times* stated that: "Perhaps the most noticeable peculiarity of the influenza epidemic is the fact that it has been attended by no trace of panic or even excitement."(7)

Influenza seemed unimportant compared with the news on the front pages of the city's newspapers. Suffragette agitation was rising as a Senate vote on the rights for women drew near, and Eugene V. Debs was on his way to jail for allegedly violating the Espionage Act.(8) On the last day of August 1918, Babe Ruth made the headlines as he pitched a three-hitter and banged out a long double to win the American League pennant for the Boston Red Sox.(9) It was apparently of no consequence that on the same day the first cases of flu were recognized among Navy personnel in Boston and 26 sailors died.(10)



The interweaving of the war and pandemic seems almost to resemble a pattern of insanity. On 11 Sept 1918 Washington officials disclosed to reporters that the Spanish Influenza had arrived in the city. On the next day 13 million men, precisely the age most likely to die of the flu, lined up all over the United States and crammed into city halls, post offices, and schools to register for the draft. "It was a gala flag-waving affair everywhere including Boston where 96,000 registered then sneezed and coughed on one another."⁽¹¹⁾

The epidemic did not kill the ranks of the famous and powerful. Perhaps if Woodrow Wilson or someone of like stature had died, the world might have remembered. It killed the daughter of General Edwards of the 26th Division of the American Expeditionary Forces, but not the general.⁽¹²⁾ It killed the daughter of Samuel Gompers, president of the American Federation of Labor, but left America's most powerful labor leader alive.⁽¹³⁾

On the level of organization and institutions, the Spanish Influenza had little impact. It did spur great activity among medical scientists and their institutions, but this was the single great exception. It did not lead to great changes in government, armies, or corporations. It had little influence on the course of political and military events because it affected all sides equally. Democrats and Republicans alike fell ill; doughboy, Tommy, Poilee, and Boche all got sick at once.

The influenza among the American troops of World War I was astonishingly contagious, and as General Pershing kept cabling for replacement troops in the battle of Meuse-Argonne, Army Chief of Staff, Peyton March, stated that the "epidemic has not only quarantined nearly all camps but has forced or suspended nearly all draft calls."⁽¹⁴⁾ The American soldier at the front found himself engaged in mortal combat with two opponents, the German Army and the Spanish Influenza. It was obvious that the flow of troops slowed and the death rate among the men in the trenches was high but that was true for all; the Germans were in mortal combat with two opponents as well.

The Spanish Influenza did not make a permanent impact on the masses, but what of the individuals in the American society? As a child I would often listen to stories recounted by my great aunt, Josie Mabel Brown, and with a child's mind they seemed to be fairy tales of a war and an epidemic told by a very old lady. However, as I grew and learned, Aunt Joe's stories were seen in a very different light. Here was an articulate 100-year-old woman, a Navy Nurse in the first decade of the 20th century, who lived through the Influenza Epidemic of 1918 and had been telling me over the years of the frightening devastation.

Josie had just graduated from Centenary Hospital School of Nursing when she received notification from

the War Department that she was to report to Great Lakes Naval Training Center in Illinois. Josie was in a theater the day she received the telegram but in the weeks to follow most public gathering places would close. The theaters and saloons closed, and for almost 16 weeks in the fall of 1918 there were "churchless Sundays."⁽¹⁵⁾ With a basket of chicken and cake, Josie boarded the train for Great Lakes to treat sailors suffering from what was thought to be cerebrospinal meningitis. After all, influenza, flu, old man gripe, whatever you called it, it was a homey, familiar illness. "There were 6,000 boys sick and dying of influenza and we thought it was meningitis."⁽¹⁶⁾

With a room of 42 beds and twice that many sick sailors, Josie often worked 18 hours a day. "As the boys were brought in we would put winding sheets on them even if they weren't dead. You would always leave the left big toe exposed and tag it with the boy's name, rank, and next of kin."⁽¹⁷⁾ As one boy lay dying in bed, one waited on the stretcher on the floor for the bed to empty. Each morning as the ambulance drivers would bring in more sick boys they would carry the dead bodies out. The morgue was stacked to the ceiling with bodies because the casket makers could not make boxes fast enough. Josie often said she felt sorry for the poor boy on the bottom. However, as the weeks dragged on truck loads of caskets left daily for the train station to destinations listed on the "tag" as next of kin.

Nursing was nine-tenths of the battle in recovering from the influenza. Since there were only palliatives for the flu and the pneumonia it developed into, doctors were not the essential ingredient in fighting the disease. With often no time to treat her patients with anything more than sips of "hot wiskey," Josie would work endless hours trying to relieve the high fevers and nosebleeds before the lungs filled with



In Seattle it was unlawful to board a streetcar without a mask. Right: In December 1918 the appropriate uniform for the Seattle Police Department included mandatory masks.

blood and faces turned blue.(18)

As the months of sickness continued, Josie's coworkers were stricken and died. She too fell ill in the spring of 1919, but by then the worst of the influenza had past. One thing Josie has never forgotten were the winding sheets. "Those awful, awful sheets! You know the city of Chicago ran out of sheets and all those poor boys ever got were a winding sheet and a wooden box."(19)

A child did not have to lose parents to be forever marked by the Spanish Influenza. Francis Russell, in a beauti-



fully written account of his childhood in 1918, shows the emotional and psychological stress that was ever present in the family during the epidemic. Mr. Russell was 7 years old and lived on top of Dorchester Hill from which he could see all of Boston and its harbor. He bought thrift stamps at 25 cents each as his part in the Liberty Bond Drive; had birthday cakes without frosting so the Belgians would not starve; and ate peaches to save the stones and baked them so they could be used in gas masks.(20) He watched the funeral processions pass by on

Walk Hill Street and the coffins pile up in the cemetery chapel and saw Pig-eye Mulvey set up a circus tent to hold the coffins that kept coming faster than gravediggers could dig.(21)

In October the schools closed because of the flu and Russell played all day. On frosty mornings he would watch the girls jump rope and sing:

I had a bird and his name was Enza
I opened the window and
In-flu-enza.(22)

He would sit and listen to the clop of horses' hooves in the fallen leaves as

the carriages pulled funeral processions by his house. One day he and two friends sneaked into the cemetery and watched a funeral.(23) Even 7-year-old Francis, as he walked home that evening, became conscious for the first time of the irreversible rush of time. "And I knew that life was not a perpetual present, and that even tomorrow would be part of the past, and that for all my days and years to come I too must one day die."(24)

"The Spanish Influenza inspired no songs, no legends, no works of art. Even fundamental facts about the epi-



American Red Cross

REPORTS SHOW EPIDEMIC IS MAKING GAINS

Hospitals Are Filled With Patients and Tents Have Been Ordered

MANY SCHOOLS CLOSE

New cases of influenza reported to the Board of Health during the 24 hours ending at 4 o'clock yesterday afternoon indicate that the epidemic has taken a turn for the worse in Pittsburgh. For that period of time 813 new cases are on record, compared with 673 for 24 hours beginning Saturday noon. The total number of influenza cases was 1,445, while the new pneumonia cases number 28, making a total of 219. Deaths from pneumonia were 29, from influenza-pneumonia, 20, and from influenza, 5, making a total number of 74 for the 24

MAYOR ASKS COUNCIL FOR \$100,000 TO HELP CHECK INFLUENZA

73 Deaths and 1,260 New Cases Are Reported.

DISEASE MAY BE ON WANE

An emergency ordinance providing \$100,000 with which to meet the demands of influenza was introduced to council yesterday by Mayor E. V. Babcock and Controller E. S. Morrow. The measure will be acted upon today when, it is probable, the amount will be reduced in committee. Mayor Babcock said there was no immediate change in the situation and that the action was taken in line with the administration's plan to take proper preventative and protective steps.

COUNTY TO GIVE AID

Annex to Courthouse Is Made Emergency Influenza Hospital

Pgh. Post

October 26, 1918

Courthouse annex on Ross street will be opened this morning by the city as another emergency influenza hospital.

URGENT CALLS SENT OUT BY RED CROSS

More Men and Women Needed to Aid in Combatting Spanish Influenza.

VOLUNTEERING SLOW

CATHOLIC AID IN EPIDEMIC IS ACCEPTED

Bishop Canevin Informs Health Director of 27 New Relief Stations.

SISTERS AS NURSES

Ban Remains; Babcock Goes To Harrisburg

State Commissioner Refuses to Modify Health Regulations Here.

NEW CASES FEWER

Encouragement Found in Reports on Influenza and

DRUG TRADE HAS BROKEN DOWN UNDER DEMAND FOR GRIP CURES

One Wholesale House Compelled to Close Its Doors.

KINGSLEY HOUSE GETS PATIENTS

Pittsburgh's drug trade has all but broken down under the demand

WORST IS OVER IN EPIDEMIC, AVERS HEALTH OFFICIAL

New Cases On the Wane, But Deaths to Increase, Opinion of Dr. Phillip E. Marks.

TOTAL OF PATIENTS, 14,634

The worst is over in Pittsburgh's influenza epidemic, so far as new cases are concerned, in the opinion of Dr. Phillip E. Marks, head of the bureau of infectious diseases, who states that the situation so far this week is much better than it was at the same time last week. New cases of influenza reported today number 628, or about the same as yesterday, making total of 14,634 cases on record here.

INFLUENZA ORPHANS IN NEED OF HOMES

CITY IS ASKED BY NORTHERN COUNTIES FOR AID TO CHECK GRIP EPIDEMIC

Pgh. Post
Pittsburgh Conditions Are Satisfactory, Officials Declare.
October 13, 1918
CHURCH SERVICES BANNED TODAY

Influenza conditions in Pittsburgh yesterday were such that medical authorities were devoting much of their energies to preparation for epidemic outbreaks in other parts of Western Pennsylvania. Pittsburgh has been empowered to handle matters in this end of the state, and calls were coming in from northern counties for assistance.

Dr. Adolph Kowatz, county and local supervisor, is arranging to hold

CITY HEALTH BOARD MAY GET POWER TO LIFT BAN HERE SOON

Epidemic Peak Reached Week Ago, Claim.

Influenza as an epidemic, reached its peak in Pittsburgh on Tuesday, Wednesday and Thursday of last week, was the opinion of Dr. Wilmer R. Batt, state registrar, after an examination of the situation yesterday, and it is believed that his report to Harrisburg will be followed by a decision to allow Pittsburgh authorities to dispose of the ban here at their pleasure.

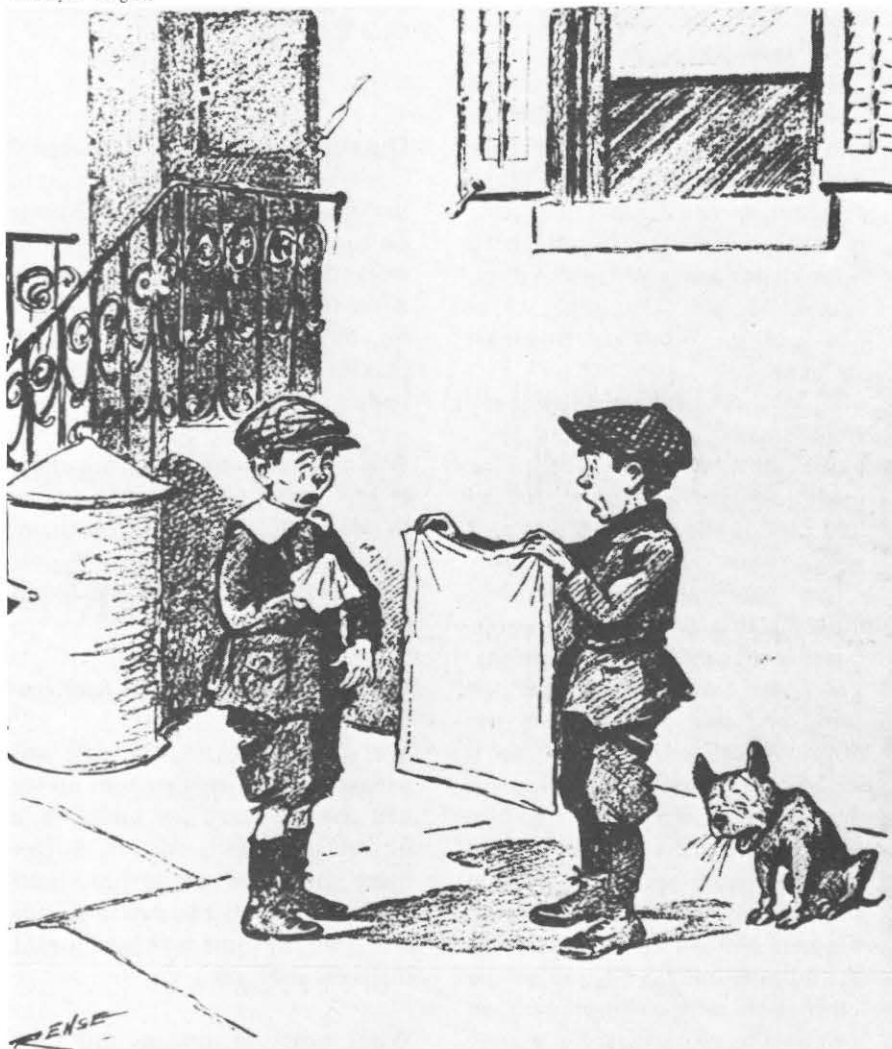
With bad news about the flu occupying the daily papers . . .

demic were meager. To this day no one can say with certainty where the disease began, where it ended, or even which virus was at fault."⁽²⁵⁾ One leading authority has summed it up: "The resemblance to the disappearance of the Cheshire Cat in *Alice in Wonderland* is striking. And to this day too, flu remains one of the great medical imponderables."⁽²⁶⁾

Today, just as in 1918, many authorities tend to regard the ravages of the flu not as a challenge but as an uncomfortable truth. In Richard Collier's commentary on the Spanish Influenza

there is a quote by author and critic H.L. Mencken which is sadly true even today. "The epidemic is seldom mentioned, and most Americans have apparently forgotten it. This is not surprising. The human mind always tries to expunge the intolerable from memory, just as it tries to conceal it while current."⁽²⁷⁾ Mencken's observations may well be the reason why the American people responded to the Influenza Epidemic of 1918 with such ambivalence; an ambivalence that was truly a "mystery" and a "paradox."

Library of Congress



"Did ya get that fer yer birthday? Gee! that's some hankachif."
 "Yeh, me mother made it fer me. It's good fer a hundred sneezes."

... The New York World tried to find some humor in the epidemic.

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A Winding Sheet and a Wooden Box

This May, Josie Mabel Brown celebrates her 100th birthday just as the Nurse Corps marks its 78th anniversary. Miss Brown was born on a farm in southwestern Missouri on 14 May 1886. When the harvest failed 12 years later, the family was forced to move by covered wagon back to her father's former home in Illinois. "I ran practically half way across the state of Missouri, I think, because the horses went too slow," she recalls. When her brothers left home to seek their fortunes, Josie helped with the farm work, driving the horses before the rake, harrow, and disk.

But a backbreaking farm life was not what Josie had in mind. She thought about medicine and becoming a doctor or nurse. In 1914 she began her nurse training and graduated 3 years later just a few months after the United States entered World War I. She remembers that new graduate registered nurses were then obligated to serve in the military. "I had to go. There was no choice about it. When my paper came back, it said, 'You are in the Navy now. Do not leave Saint Louis; do not change your address; do not change your telephone number.'"

Interviewed at her California home by her niece, Rachel Wedeking (mother of Carla Morrissey), Miss Brown swells with pride when asked about her career as a Navy Nurse. Moreover, she can still vividly relate crisp memories of a period that is seldom discussed in the history texts.

Rachel Wedeking: How did you begin your Navy career?

Josie Brown: One day I was at the theater and suddenly the screen went blank. Then a message appeared across the screen "Would Josie M. Brown please report to the

ticket office?" I went back and there was a Western Union boy with a telegram from the Bureau of Medicine and Surgery in Washington, DC. It said, "You are called to duty. Do you have enough money to travel? And when is the earliest date that you can travel?" And I wired back, "I have money. I can pay my way." About 45 minutes later a reply came back. "Proceed to Great Lakes, Illinois. Keep strict account of your expenses. Do not pay over \$1.50 for your meals or over 50¢ for tips. You will be reimbursed."

My train was an old pullman going to Chicago. I went right through our town and saw the light in the window that mother put there. I got to Chicago in the morning. When someone opened a paper in front of me I saw "6,000 in the hospital have Spanish Influenza in Great Lakes, Illinois." I said, "Oh, that's where I'm going. What is Spanish Influenza?"

I got to the gate and showed my Red Cross pin and my orders. They put me on a bus and sent me to the main hospital, then took me for my first meal in the service. It was cold pork, sweet potatoes, and apple sauce. Afterward, my supervisor took me to a ward that was supposedly caring for 42 patients. There was a man lying on the bed dying and one was lying on the floor. Another man was on a stretcher waiting for the fellow on the bed to die. We would wrap him in a winding sheet because he had stopped breathing. I don't know whether he was dead or not, but we wrapped him in a winding sheet and left nothing but the big toe on the left foot out with a shipping tag on it to tell the man's rank, his nearest of kin, and hometown. And the ambulance carried four litters. It would bring us four live ones and take out four dead ones.



Josie Mabel Brown

Photos courtesy of Carla R. Morrissey

Did they keep them in the morgue?

The morgues were packed almost to the ceiling with bodies stacked one on top of another. The morticians worked day and night. You could never turn around without seeing a big red truck being loaded with caskets for the train station so the bodies could be sent home.

Was there any treatment for these boys?

We didn't have time to treat them. We didn't take temperatures; we didn't even have time to take blood pressure.

What did you do for the temperature?

We would give them a little hot whiskey toddy; that's about all we had time to do. They would have terrific nosebleeds with it. Sometimes the blood would just shoot across the room. You had to get out of the way or someone's nose would bleed all over you.

What other symptoms did they have?

Some were delirious and some had their lungs punctured. Then their bodies would fill with air. You



Nurse Brown and a sailor pose at Great Lakes in 1918 and . . . recently at the Shea-Arentzen Nursing Symposium.

would feel somebody and he would be bubbles.

That must have been a terrible disease.

You would see them with bubbles all through their arms.

You mean air would get into their tissues?

Yes. Oh, it was a horrid thing. We had to wear operating masks and



gowns all the time. We worked 8 hours on a ward sometimes. If nobody had a nurse on another ward, we would go back to our quarters for an hour and then work another 8 hours. It was 16 hours a day until the epidemic was over.

When was that?

The worst was over just a little before Christmas 1918. I was assigned to another ward by that time. One day a man came through and said the armistice was signed. The boys just about hit the ceiling they were so glad. During the epidemic, though, our Navy bought the whole city of Chicago out of sheets. There wasn't a sheet left in Chicago. All a boy got when he died was a winding sheet and a wooden box; we just couldn't get enough caskets.

I understand you also caught the flu.

It was March 1919 when I got sick. They didn't have a room for me so they curtained me off in a ward with other women. They didn't know what I had because I was never diagnosed. I ran a temperature of 104° or 105° for days; I just don't remember how many days. They put an ice cap on my head, an ice collar on my neck, and an ice pack over my heart. My heart pounded so hard that it rattled the ice; everything was rattling, including the chartboard and bedsprings.

Do you have any idea how many died altogether?

They died by the thousands. There were 173,000 men at Great Lakes at the time, and 6,000 were in the hospitals at the height of the epidemic. I suppose no one knows how many died. They just lost track of them.

Josie Brown was discharged from the Navy in September 1919 and took a job as a nurse in a military school.

Immunization Against Communicable Diseases

Viral Vaccines

CAPT Alfred D. Heggie, MC, USNR

Part two in a three-part series

Viral vaccines contain either live attenuated viruses or inactivated viruses. Live attenuated virus vaccines are made by methods that alter the more virulent disease-producing properties of viruses without interfering with their ability to infect the vaccinee and induce immunity. Inactivated virus vaccines are made by treating virulent viruses with chemicals that render them noninfectious and unable to cause disease. Their ability to induce formation of protective antibodies, however, is preserved.

Live attenuated virus vaccines have the advantage of producing long-lasting immunity that is sometimes lifelong. Their disadvantages are that they can produce serious disease in some persons with defective or suppressed immune systems, and they

have very stringent storage requirements that may be difficult to maintain in the field. Another disadvantage is that it is usually not advisable to give live virus vaccines to pregnant women because of theoretical possibilities of damaging the fetus.

Inactivated virus vaccines, in contrast, can be given safely to most persons, including pregnant women when necessary, because they cannot produce infection. They also have less stringent storage requirements than live virus vaccines and are less likely to lose potency during storage. Their disadvantage is that they usually require booster doses to maintain immunity.

Adenovirus 4/7

Adenovirus vaccines contain live attenuated adenoviruses, types 4 and 7, and are used only in recruits. The vaccines are in tablet form and are given together as a single oral dose. Recipients should be encouraged to swallow the tablets whole because they have an unpleasant taste if chewed. Booster doses are not required. Adenoviruses, types 4 and 7, have been important causes of respiratory disease in recruits undergoing basic train-

ing. To prevent these diseases, adenovirus vaccines are given to all male recruits before they begin basic training. If epidemiologically indicated, these vaccines may also be given to nonpregnant female recruits.

Hepatitis B

Hepatitis B vaccine consists of inactivated surface antigen (HB_sAg) of hepatitis B virus, obtained from the blood plasma of antigen positive donors. After purification by ultracentrifugation, HB_sAg is inactivated by sequential treatment with 8M urea, pepsin at pH of 2, and 1:1000 formaldehyde. Treatment in this manner inactivates (renders noninfectious) not only HB_sAg, but all other known viruses, including T-lymphotropic virus (HTLV-III, the virus associated with AIDS). Immunization requires three intramuscular (IM) injections (see Part I, Table 2 for schedule). IM injection should be given into the *deltoid* muscle. The buttock or thigh should *not* be used as injection sites because in these areas the vaccine may be inadvertently deposited in fatty tissue which impairs the immune response to this vaccine. Soreness at the site of

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injection is the only adverse effect that has been associated with Hepatitis B vaccine. Immunization is not required, but is highly recommended for all personnel whose activities involve frequent contact with human blood or blood products.

Influenza Virus

The influenza viruses contained in influenza are grown in embryonated chicken eggs, inactivated with formaldehyde, and purified by zonal centrifugation to minimize the amount of residual egg protein in the vaccine. Although allergic reactions to the very small amount of egg protein remaining in the vaccine after purification are very infrequent, persons who have had symptoms or signs of an anaphylactic reaction after eating eggs should not be immunized. Contrary to folklore, there is *no* possibility of causing influenza with the vaccine because the killed viruses that it contains are not infectious. However, limited influenza-like reactions such as fever, myalgia, and malaise sometimes develop after immunization. Therefore, persons with acute febrile illnesses should not be given influenza vaccine until after recovery. Guillain-Barré syndrome was reported in some recipients of the swine influenza vaccine in 1976-77. Whether these cases were caused by the swine influenza vaccine or would have occurred anyway is a controversial point. Influenza vaccines in current use do not contain swine influenza virus.

The virus content of influenza vaccine is revised each year to incorporate the virus strains that are expected to be prevalent. When the vaccine contains the prevalent strains of influenza virus circulating in a given year, the incidence of influenza is reduced by 70-90 percent in immunized persons. Immunity induced by the vaccine is temporary, however, and annual re-immunization is necessary to maintain immunity and to immunize against newly-occurring strains of influenza virus. Influenza is a highly prevalent disease, and influenza immunization is one of the most

important programs in military medicine in terms of the amount of disease it prevents.

Measles

Measles vaccine contains live attenuated measles virus. The vaccine must be carefully stored under refrigeration according to the manufacturer's instructions (usually 2-8°C) because the vaccine virus is easily inactivated by improper storage. Compartments in a refrigerator door usually do *not* provide adequate refrigeration for storage. Vaccines should be stored on the shelves of refrigerators after checking to insure that this location provides the required temperature range. Although measles vaccine is prepared in cell cultures made from chicken embryos, the chance of allergic reactions occurring in persons allergic to eggs, chickens, or feathers is very low. The benefits conferred by immunization of susceptible personnel outweigh the small risk of allergic reactions, except in persons who have had symptoms or signs of anaphylactic reactions after eating eggs. Fever occurs in 5-15 percent of vaccine recipients beginning 5-6 days after immunization. Fever may be accompanied by a transient rash, but vaccinees are not contagious. Because measles vaccine contains live attenuated virus, it should not be given to immunosuppressed or pregnant persons. Immunization is thought to provide lifelong immunity.

Mumps

In addition to involvement of the salivary glands, mumps may also cause meningitis, and in males, orchitis (painful inflammation and swelling of the testicles). Therefore, immunization of susceptible personnel is recommended. Immunization is particularly important in persons involved in delivery of health care because they are likely to be exposed to mumps. Mumps vaccine contains live attenuated mumps virus grown in chicken embryo cell cultures. It contains very little chicken or egg protein but should not be given to persons with histories of an anaphylactic reaction after eat-

ing eggs. Reactions to the vaccine are rare. No booster doses are required.

Polio, Trivalent Oral

Trivalent oral polio vaccine (TOPV) contains live attenuated polioviruses, types 1, 2, and 3. To prevent inactivation of these live viruses, TOPV must be stored frozen until needed for use. Once thawed, TOPV may be kept in a refrigerator for up to 7 days. This vaccine is given by mouth. After ingestion, the attenuated polioviruses infect the mucosa of the small intestine and cause production of both circulating and surface antibodies. This is a contrast to the other type of polio vaccine, inactivated poliovirus vaccine, which induces only circulating antibodies. A recipient of TOPV, if exposed later to virulent polioviruses, is protected both against intestinal infection and against developing poliomyelitis. Persons who receive the inactivated vaccine, if later exposed, are protected against poliomyelitis but not against intestinal infection. They may then excrete virulent poliovirus by the fecal route and become sources of infection for others. Because most adults have been immunized with 3-5 doses of TOPV during childhood, and because the close confines of recruit training result in repeated exposure to circulating polio vaccine viruses, persons entering the Navy or Marine Corps are required to receive only one dose of TOPV to insure that immunity has been developed against all three types of polioviruses.

Rabies, Human Diploid Cell Vaccine (HDCV)

HDCV contains inactivated rabies virus. It is prepared in cultures of human cells in contrast to the formerly used vaccine that was prepared in embryonated duck eggs. (HDCV produces a much higher level of antibodies against rabies virus than did formerly used types of rabies vaccine. Pre-exposure immunization (immunization received before there is a chance of being exposed to rabies virus) is required for Navy and Marine Corps personnel whose duties involve fre-

quent contact with potentially rabid animals or with laboratory specimens likely to contain rabies virus. See Part I, Table 2 for the recommended pre-exposure immunization schedule. In addition to the recommended schedule, three intradermal injections of 0.1 ml of HDCV have also been shown to be effective for pre-exposure immunization. However, the intradermal method does not yet have FDA approval.

Persons who received adequate pre-exposure immunization and who are later exposed to rabies nevertheless require post-exposure doses of HDCV. The schedules for pre-exposure and post-exposure administration of HDCV are different. The considerations involved in post-exposure rabies prophylaxis are complex and are beyond the scope of this article. ACIP* recommendations should be consulted.

Rubella

For reasons that are not fully understood, the incidence of rubella in military recruits before immunization of susceptible persons was instituted was very high. Persons who were not already immune to rubella before arriving at recruit camp were almost certain to contract the disease during basic training. This continuously high incidence of rubella is not seen among other groups of young persons, such as college students, although outbreaks among students are not uncommon.

Rubella is not a serious disease, except for the birth defects that may result from the occurrence of rubella during pregnancy. Military recruits are immunized because rubella results in loss of time from training. Immunization also prevents spread of rubella from recruits to civilian populations, such as military dependents, including pregnant women.

Rubella vaccine contains live attenuated rubella virus that is prepared in cultures of human cells. Allergy to eggs, therefore, is not a contraindica-

tion to rubella immunization. Rubella vaccine should not be given to women who are pregnant or who anticipate becoming pregnant during the 3 months following immunization because of the potential risk of infecting a baby *in utero* with the vaccine virus. As with all live virus vaccines, rubella vaccine should not be given to immunosuppressed persons. Adverse reactions to the vaccine are infrequent in healthy persons. The most troublesome complication is transient arthralgia and, less frequently, arthritis beginning 3-25 days after immunization. Women are affected by this complication more frequently than men.

Smallpox

Smallpox vaccine contains live vaccinia virus that produces immunity against smallpox because of its close antigenic similarity to smallpox virus. In the past, smallpox vaccination was recommended for everyone. Then as the prevalence of smallpox decreased as the result of vaccination programs, the risk of the adverse reactions associated with vaccination became greater than the risk of being exposed to smallpox in the United States. In 1971 therefore, the U.S. Public Health Service recommended that smallpox vaccinations be given only to persons traveling to parts of the world where smallpox was present. In 1977 the World Health Organization declared that smallpox had been eradicated from the world as the long-awaited result of international smallpox immunization programs. Because there was no risk of exposure to smallpox anywhere in the world then, the Public Health Service recommended that smallpox vaccination be discontinued. Civilians, including military dependents, should not be vaccinated against smallpox.

Because of the possibility that smallpox virus might be used by some future enemy as a biological warfare agent against U.S. forces, all newly inducted Navy and Marine Corps personnel are required to be vaccinated against smallpox (COMNAVMEDCOM MSG 2 May 1985). Vaccination

must be done within the confines of naval training centers, Marine Corps recruit depots, officer candidate or indoctrination schools, or the U.S. Naval Academy where contact with nonvaccinated persons can be minimized. Only personnel who will remain at these facilities and who will be separated from the unvaccinated general population for a minimum of 3 weeks following vaccination shall be vaccinated. Reservists, including NROTC, who do not commence extended active duty from one of these types of facilities, are exempt from smallpox vaccinations.

The pustule that is produced on the skin by vaccination contains infectious virus. Virus can be spread to other parts of the vaccinee's body, usually by the fingers, and from vaccinees to unvaccinated persons by close skin contact. Vaccinated personnel should be instructed not to rub or scratch the vaccination site and to avoid skin contact with unvaccinated persons until the eschar (scab) has dropped off (usually 3 weeks after vaccination). Transmission of vaccine virus to children or adults with certain skin diseases or disorders of the immune system can result in serious and even life-threatening infection with the vaccine virus.

Newly inducted and recently vaccinated personnel who depart from military bases unexpectedly (e.g., on emergency leave) must be counseled about these risks to unvaccinated persons. Smallpox vaccination should be given only once during a military career. Revaccination for smallpox should not be administered except on specific direction from COMNAVMEDCOM.

Yellow Fever

Yellow fever vaccine contains live attenuated yellow fever virus prepared in embryonated eggs. The vaccine virus is very unstable and requires careful storage. Preferably, yellow fever vaccine should be kept frozen at temperatures below 0°C but must not be subjected to temperatures below -30°C or above 5°C. After being prepared for use by reconstitution with

*Immunization Practices Advisory Committee

the diluent provided, vaccine must be administered within 60 minutes. Because of this requirement, administration of single doses is not practical. Therefore, yellow fever vaccine is usually given to groups of persons at scheduled times and locations.

Cholera vaccine may interfere with the immune response to yellow fever vaccine. In the unlikely event that cholera vaccine should be required in individuals who need yellow fever vaccine, these vaccines should be given at least 3 weeks apart. Persons who have a history of having had anaphylactic symptoms or signs after eating eggs should not receive yellow fever vaccine. From 2 to 5 percent of recipients have mild headaches, myalgia, low grade fever, or other minor symptoms 5-10 days after immunization.

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MSC Anniversary Ball

The Navy Medical Service Corps will celebrate its 39th anniversary 2 Aug 1986 at the Bethesda Officers' Club, located on the compound of the Naval Medical Command, National Capital Region, Bethesda, MD. All Medical Department officers, active, Reserve, and retired, are invited.

The uniform for military attendees is Dinner Dress, White Jacket, with optional Dinner Dress, White for lieutenants and below. Civilian attire is black tie.

Reservations are required. Tickets are \$15.00 per person for WO/ENS/LTJG and guests, \$20.00 per person for LT/LCDR and guests, \$25.00 per person for CDR/above and guests, and \$25.00 per person for civilians. For information, call CDR S.P. Kafer at (Auto-von or Commercial) 295-4879.

Pedal Polydactyly

An Interesting Case

CAPT Robert J. Bailey, MC, USN
LCDR Frank G. Conroe, MSC, USN
CWO4 Reynaldo L. Aponte, PA-C, USN

Polydactyly is a term which refers to an extra number of fingers, toes, or combination of both. There are many variations of this deformity. Any of the digits may have its metatarsal or metacarpal. This condition is usually nonspecific but may be found in conjunction with other congenital malformations including Lawrence-Moon Biedl syndrome, Ellis Van Creweld syndrome, and trisomies 13, 18, 21, and D1.

In Woolf's study of 59,561 infants in Utah an incidence of roughly one case per 2,000 births was found.

Fifth toe duplication or post-axial polydactyly is divided into type A in which there is a well developed functional digit and type B in which there is a vestigial digit. It is thought that type A represents gene plus modifiers and that a dominant autosomal gene is responsible for type B. Thirty percent of patients with this deformity have a positive family history of polydactyly.

The patient described in this paper is somewhat atypical since the extra digit amputated at the time of surgery was his fifth rather than the sixth and/or the seventh toes which are frequently surgically removed.

When the fifth ray is involved there may be a Y-shaped, T-shaped, wide metatarsal head (with two digits) or a complete duplication including a sixth metatarsal and its digit.

Dr. Bailey is head of the Orthopedic Department, Naval Hospital, Camp Lejeune, NC 28542-5008. Dr. Conroe is assigned to the Podiatry Department at the same facility as is CWO4 Aponte, who is a physicians assistant.

Surgical Objectives

Many infants undergo amputation of these extra digits for cosmetic reasons. There are still some patients who present as active duty service members with this untreated condition (Figure 1). This presents a problem with proper fitting of footwear especially in the Marine Corps setting. These patients usually present to the Orthopedic/Podiatry Clinics.

A patient who presents with a bilateral symmetrical duplication should not require ablation since there is little problem in fitting of footwear. On the other hand, a unilateral extra digit poses a shoe-fitting problem requiring two different widths. Uniform or civilian shoe facilities are reluctant to "split fit" or separate two pairs of shoes or combat boots to accommodate the patient. Also, it becomes an administrative difficulty to measure specially and order custom made boots and service shoes from the Defense Orthopedic Footwear Facility in Boston, MA. Properly fitting and getting custom made footwear to a service member who is in a deployable status is extremely difficult and sometimes it may become more expedient to separate medically a patient.

Case Study

In September 1984 a Caucasian, active duty male Marine presented to the Branch Clinic of the Naval Hospital, Camp Lejeune. He complained of pain and difficulty obtaining properly fitting footwear due to the presence of an extra pedal digit. Physical examination revealed a nonfunctioning fifth digit of the right foot. However the

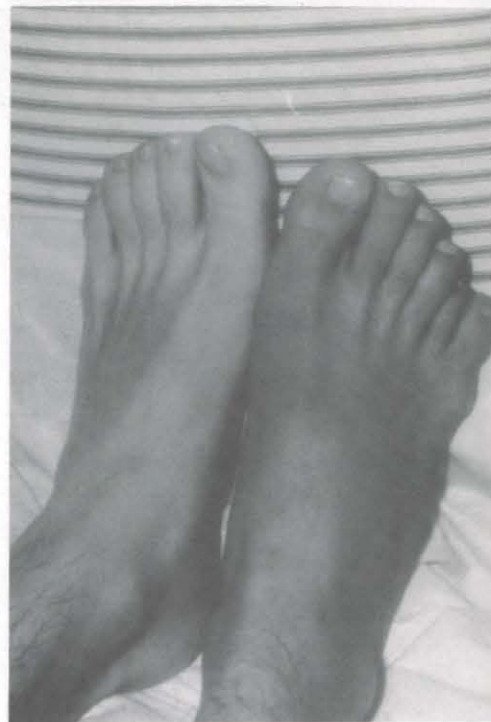


Figure 1

sixth digit appeared to be well formed with functioning flexor and extensor tendons. Radiographs (Figure 2) of the affected foot revealed a hypertrophic Y-branched fifth metatarsal with an extra digit.

It was determined that elective surgery would correct the anatomy; therefore, a surgical procedure was planned as follows. Under spinal anesthesia and after sterile preparation and draping with a pneumatic tourniquet inflated to 300 mm/Hg at the right mid-thigh, a racquet-shaped wedge of tissue including the vestigial fifth toe and medial branch of the fifth metatarsal were excised (Figure 3). A closing wedge osteotomy with K wire fixation was performed to realign the metatarsal to a more normal position and to narrow the forefoot (Figure 4).

The patient was placed in a short leg, nonweight-bearing cast for 4 weeks followed by a weight-bearing one for 4 more weeks. The subcutaneous K wire was removed under local block 6 weeks postoperatively. The patient was returned to full duty within 4 months.

The surgical removal of an accessory digit with metatarsal osteotomy



Figure 2

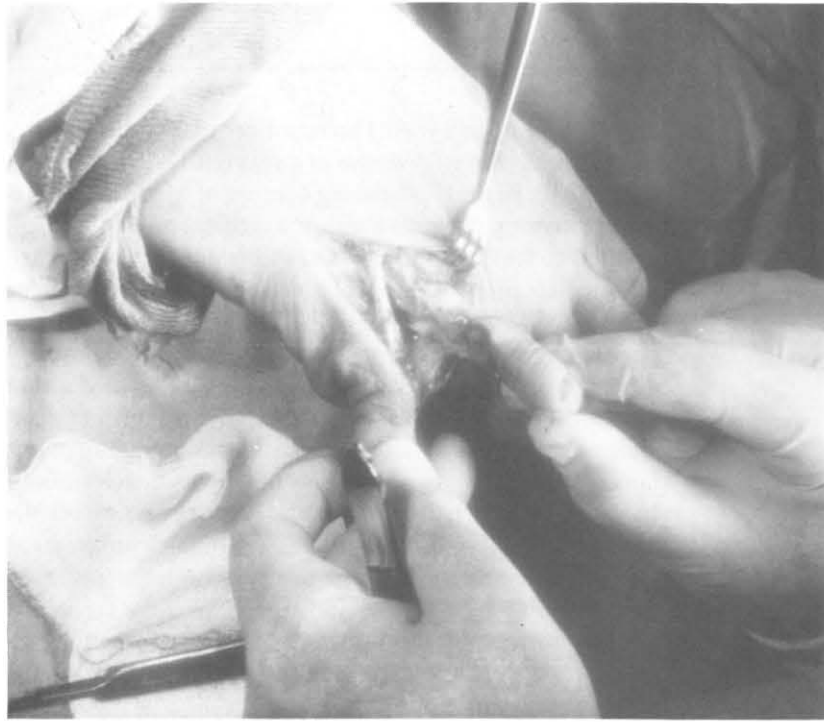


Figure 3

and internal fixation can return a service member to full duty within a reasonable time. Conservative nonsurgical management may be achieved by fabricating custom made combat boots and shoes. It must be noted, however, that this approach may be complicated by deployment requirements and may become cost-prohibitive. A service member may receive one pair of boots and service oxfords per year from the Defense Orthopedic Footwear Facility.

There are many variations of polydactyly of the foot. A general rule is to remove the metatarsal or portion thereof which is least developed. The surgical procedures should aim at producing a normally aligned foot.

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Figure 4

To the Editor

Over the past 6 to 8 years I have noticed a definite improvement in *U.S. Navy Medicine* as a source of information on the wide scope and fascinating content of Medical Department activities. After 21 years as a medical officer I am still amazed to learn about new and interesting areas in which our medical professionals are involved. For instance, in the November-December 1985 issue I learned of medical support to ANGLICO teams and efforts to insure properly designed medical facilities by NAVFAC. I learned about equilibrium disorders associated with flying high-performance aircraft, and developed a basic understanding of our family advocacy program. The historical articles about Navy medical personnel in World War II and about the historical development of occupational health programs at Long Beach Naval Shipyard provide me important perspectives on where we are and where we came from as a military medical organization. I believe I am better prepared to do my job as a result of the excellence of the material you are publishing.

U.S. Navy Medicine shows us how big and complex our Medical Department is. It is a tough, tough managerial job to keep such a monster functioning, particularly in the bureaucratic framework that large government requires. We have our well-publicized failures. We certainly aren't perfect. But who could do it better? As health program managers and users, we feel frustrated with day-to-day failures of our system to deliver the people, equipment, and money we need, when we need it. At the same time we must recognize the system hires us specifically to overcome difficult day-to-day operational situations. If our jobs were easily performed by just anyone, we wouldn't be needed. To me, the amazing phenomenon is that the Navy Medical Department does so many things so well most of the time. We are the most complex medical care organization in the world, providing our services and caring under the seas, on top of the seas, in outer space, in tropical jungles and frigid mountains, in shipyards, air stations, medical centers, embassies, Congress, and even the White House. What other organization has such a broad scope of medical services for which they are responsible?

U.S. Navy Medicine, you are guilty of keeping me informed. Your dedicated effort shines out like a beacon in the night. Your efforts are appreciated.

J.J. Bellanca
CAPT, MC, USN

I have just had the opportunity to read with great interest the article "Hyperbaric Treatment Yields Impressive Results" by JO1 B. Mansfield in *U.S. Navy Medicine*, Volume 76, No. 1, 1985.

During the latter half of the 1960's, the hyperbaric chamber at the Medical Research Laboratory, Naval Submarine Medical Center, Submarine Base, New London, was utilized on many occasions for the treatment of gas

gangrene, severe middle ear infections (causing double vision), etc. of both civilian patients and military personnel and their dependents. Civilian patients were referred by civilian institutions such as Massachusetts General Hospital, local civilian hospitals, and the Naval Hospital at the Submarine Base. In all instances the treatment in the hyperbaric chamber was successful.

I believe that LCDR Mark Murphy's comment that "the rapidly growing field of hyperbaric medicine is based largely on the treatment of diving accidents and ongoing research in the field" ignores the successful treatment of various medical conditions in Navy hyperbaric chambers in the early 1960's. Medical officers such as CAPT George Bond, CAPT Robert Workman, CDR Earl Ninow, LCDRs Donald Terry and Don Evans, as well as CAPT Walter Mazzone, MC, completed extensive work and in depth research into hyperbaric medicine.

Further, these medical officers and other Medical Research Laboratory staff members worked with civilian physicians and nurses sharing their expertise in setting up a hyperbaric chamber for full time use not only for treating illness, but also for performing surgery in hospitals such as St. Luke's Hospital, St. Louis, MO.

Navy medicine has contributed greatly to the success of hyperbaric medicine not only in the United States but in other countries such as England and West Germany.

Stephen J. Molloy
CWO4, USN (Ret.)

A few days ago, a friend was in the Bremerton Navy Yard medical facility when he spotted a copy of *U.S. Navy Medicine*, November-December 1985 issue. The title of an article, "Yangtze Patrollers," immediately struck his eye, as he is a member of the Yangtze River Patrol Association. (Until recently, I was the editor of their quarterly magazine, *Yangtze River Patroller*.) So of course, my friend sent me a Xerox of the article.

The face of George Ferguson on the front cover is that of an old friend and shipmate. I knew, of course, that he had been lost in the war as a POW, but never knew the details of his story.

At the end of November 1941, George and I came downriver from Hankow to Shanghai aboard the river gunboat USS *Wake*, arriving at about 2:30 p.m. Most of *Wake's* company was transferred to USS *Luzon* and USS *Oahu*, also river gunboats but slightly larger. *Wake* stayed at Shanghai with 10 Fleet Reserves aboard, people rounded up in Shanghai, to serve as a communication link with the "outside" for the U.S. consulate general. The two other gunboats, boarded up and strengthened as best we could for a trip at sea they never were intended for, ran through a tremendous typhoon enroute to Manila and on several occasions surrounded by Jap warships "ordering" us by international signal to proceed into a Taiwan port.

George must have ridden *Luzon*; I don't recall his being aboard *Oahu* with me. But it would have been easy to

overlook anyone else, as my entire time was either spent on the bridge as guest navigator, or holding on for dear life, lashed into my bunk as the ship rolled up to 52°, an unheard of performance for almost any ship, let alone a river gunboat.

On arrival in Manila, I was immediately transferred to command the two-masted schooner USS *Lanikai*, to carry out a mission specifically ordered by the President. Thanks to this, I was spared capture and probably death. Thus, I am delighted to learn at last the story of one of my shipmates on *Wake*. He was a sterling character, with a whimsical sense of humor and a wide interest in what went on around him. The medical demands of the some 50 ship's company were not such that the ship's medico didn't have plenty of unscheduled time. Thus, he frequently doubled in many trades: ship's service officer, athletic officer, coach of the baseball team, boarding officer sent to foreign men of war for information, consolation trips to missionaries (they didn't like those bloody-minded line officers, whose trade was fighting!), and helping out in hospitals ashore with the wounded from bandit attacks or later, in the Sino-Japanese "incident," that preceded WWII. In the wardroom, sometimes weeks away from any taint of civilization, we five officers became closer than most families. Line officers picked up a lot of medical lore, and the medico learned a lot about ship handling in close quarters with a million junks and sharp rocks. In fact, the lure of the Yangtze was such for the medical officers that the membership of the Yangtze River Patrol Association counts among its enthusiasts a disproportionately large percentage of former gunboat medical officers, including the widely known late CAPT Charles Marmaduke Parker. Charlie learned after much practice to play the Chinese flute. But the dreadful noises emanating therefrom were so destabilizing that even Charlie couldn't stand it, and poked the business end of the flute through a hole in his cabin bulkhead into the adjoining cabin.

Thank you for a fine story! I doubly appreciated it because of its associations.

Kemp Tolley
RADM, USN (Ret.)

I much enjoyed reading J.K. Herman's article "Yangtze Patrollers—Bilibid POW's" in *U.S. Navy Medicine*. Having written a lengthy dissertation on medical missionary work during the early years of this century in China, I am gratified that your magazine has chosen to give more publicity to the U.S. Navy in China, even though our reasons for being there were not entirely altruistic.

There were several geographic errors in the first installment of the article which need to be corrected:

(1) The map on page 17 is a modern map using the current pinyin romanization. As such, it does not accurately portray the China of the 1930's. For instance, the capital of China in 1941 was Nanjing, not Beijing. Also, the map of Southeast Asia was somewhat simpler. The Japa-

nese puppet state of Manchukuo occupied most of north China.

(2) On page 16 occurs the phrase "Occasionally, when *Guam* ventured upriver to Hankow and Wuhan . . ." The author treats the two names as if they designated two different cities. In fact, the three cities of Hankou (Hankow), Wuchang, and Hanyang are collectively known as the Wuhan cities, the name Wuhan comprising the first syllable of the name Wuchang and the first syllable both of Hankou and Hanyang (which is represented by the same character in Chinese).

These errors, trivial though they may be to the thrust of the article, are the kinds of things that geographers feel the need to correct, and I am passing them on for your information.

Richard J. Forde
LCDR, MC, USNR

I have just read with interest the article by LCDR J.L. Brittain, MSC, "China White—The Bogus Drug," in the January-February 1986 issue of *U.S. Navy Medicine*. As an anesthesiologist in California I am quite aware of the misuse of the new narcotics on the street and the grave danger they present. Unfortunately, LCDR Brittain is quite misleading in his article concerning the clinical use of fentanyl.

Fentanyl is one of several synthetic narcotics now used throughout the world, on a daily basis in the practice of anesthesia. It is not being discarded, as suggested in the article, because "the line between coma and death is so narrow." In fact, the use of these drugs in our practice is increasing because of their safety as compared to older narcotics and other anesthetics. Unlike morphine, fentanyl does not cause a release of histamine leading to vasodilatation and hypotension. Unlike meperidine and the volatile anesthetics, fentanyl does not decrease contractility of the myocardium. Fentanyl and its analogs suppress the stress response to surgery. This quality alone leads to the stable perioperative course we now can offer our sickest patients especially our open heart patients. Finally, the treatment for fentanyl overdose is no different than that for other narcotics, as are the symptoms. The primary difference is one of potency on a milligram for milligram basis. In the clinical setting this is an irrelevant fact at best.

Finally, what concerns me most about this article is the impression this gives other readers. I have had several individuals ask why we are using this dangerous drug in the operating room. Even one has suggested that fentanyl be removed from the pharmacy. I suggest that a professional article should be better researched than this, that references which include *The New York Times* and *Newsweek* for its medical facts is inadequate, and that this misinformation can be damaging to patient care and medical advances.

John P. Abenstein
LT, MC, USNR

In Memoriam

Henry Hoogstraal, Ph.D., D.Sc., world renowned entomologist, parasitologist, and researcher, died after a short illness in Cairo, Egypt, on 24 Feb 1986, his 69th birthday. Dr. Hoogstraal had been for over 35 years head of the Department of Medical Zoology of the U.S. Naval Medical Research Unit #3 (NAMRU-3) in Cairo, where he became internationally recognized as the leading authority on the biology, distribution, systematics, behavior, and evolution of ticks. His studies of these important vectors provided new knowledge about diseases caused by tick-borne viruses, Rickettsia, bacteria, and protozoa.

In the course of his many worldwide travels and investigations, Dr. Hoogstraal organized and conducted hundreds of field expeditions, studying both ticks and other ectoparasites and their association with bird and animal fauna as well as their role as disease vectors. As a result, he became one of the most knowledgeable field biologists of Africa and the Middle East and an acknowledged leader in tick-borne disease epidemiology. His laboratory at NAMRU-3 became the center of all phases of tick biology.

Dr. Hoogstraal authored over 500 research papers, directed research on over 800 projects from his lab, and developed and edited the definitive bibliography of tick and tick-disease

related publications. He also developed and edited a series of over 2,000 translations of Eastern European and Soviet publications in this field, works otherwise unavailable to Western scientists and medical workers.

During his long career, Dr. Hoogstraal was awarded 23 honorary degrees, medals, special research citations, and participated in honorary lectureships. He was the immediate past president of the American Society of Parasitologists and was president-elect of the American Society of Tropical Medicine and Hygiene, having also been honored by both societies with their highest awards for scientific achievement.

Dr. Hoogstraal served as a mosquito researcher in New Guinea and the Philippines with the U.S. Army Medical Service Corps during World War II, and as a member of the Cairo to Cape, University of California—U.S. Navy African—Madagascar expedition of 1948-49. After 2 years of jungle warfare in New Guinea and the Philippines, he took his discharge in Manila in 1945 in order to spend 2 more years exploring and collecting in Mindanao and Palawan. This resulted in the richest collection of entomological specimens ever made from these regions.

Dr. Hoogstraal's invaluable research library of some 200,000 items, his unique tick specimen collection, field notes, manuscripts, original tick drawings, research memorabilia, and other materials will comprise a curated special Hoogstraal collection and Tick Study Center at the Smithsonian Institution. Work on his tick bibliography volumes will continue, and the Center will serve as a focus for tick research. Dr. Hoogstraal developed plans for this ongoing research center, the fulfillment of a hope he long cherished and one he lived to see established.

Contributions will be welcomed to the Harry Hoogstraal Improvement to the Insect Collection Fund, Department of Entomology, NHB, Smithsonian Institution, Washington, DC 20560.

CAPT Ben K. Hastings, MC (Ret.), former director of Radiation, Submarine and Diving Medicine at the Bureau of Medicine and Surgery died suddenly 22 April 1986 of cardiac arrest near his home in Novato, CA.

Born 19 Nov 1921 in Spokane, WA, CAPT Hastings attended Reed College in Portland, OR, before he was called to active duty by the U.S. Navy in 1943. He completed college in Fayette, MO, and received a Bachelor of Arts in Chemistry and Biology in 1944. He attended Northwestern University in Chicago, IL, and upon completion in July 1944 was commissioned an ensign. He was discharged in August 1946 and entered the University of Oregon Medical School where he received his M.D. degree in June 1950. Dr. Hastings was called back to active duty as a physician where he was trained as a submarine and diving medical officer and served with the fleet until 1957. He was then sent to the University of Rochester, NY, for training in occupational and radiation medicine where he received a master's degree in radiation medicine in 1958. He was stationed at the Naval Reactor Facility in Arco, ID, until November 1959.

Dr. Hastings reported to Mare Island, Vallejo, CA, to serve as Medical Officer on board USS *Theodore Roosevelt* (SSBN-600) in 1959. He served on board *Roosevelt*, homeported in Groton, CT, until 1962 when he was designated Submarine Flotilla One Medical Officer in San Diego, CA. In 1964 Dr. Hastings was transferred to COMSUBPAC, Pearl Harbor, as Force Medical Officer until 1967 when he was transferred to the Bureau of Medicine and Surgery to serve as director of Radiation, Diving and Submarine Medicine until 1973 when he retired from the Navy.

Dr. Hastings moved to the bay area upon his retirement and entered a civil service career serving as staff medical officer for the Naval Hospital, Oakland Occupational Branch Clinic at Mare Island where he retired in July 1984.



Dr. Hoogstraal

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